

XII.—*On the Species of Pseudoboletia.*  
By Prof. F. JEFFREY BELL, M.A.

M. DE LORIOI has just added another to the many services he has rendered to the students of Echinoderms by the publication of the first part of a "Catalogue raisonné des Echinodermes recueillis par M. V. de Robillard à l'île Maurice" \*, in which the Echinoidea are discussed. Among the forms found was the species of *Pseudoboletia* long since described by Michelin as *Toxopneustes indianus*; of this a full and elaborate description is opportunely given, and the concluding paragraph of discussion ends with the sentence—"M. Bell (*loc. cit.*) a pris, je crois, le *Pseud. indiana* pour le *Ps. granulata* et vice versâ; le *Ps. granulata* n'a jamais encore été envoyé de Maurice, à ma connaissance du moins."

It is perfectly true that M. de Loriol's description of *P. indiana* applies to specimens which have been labelled by me *P. granulata*.

The first question which arises, on this matter of fact being settled, is what kind of proof can one or the other adduce in favour of the view which he holds; as M. de Loriol says he has a specimen from Réunion which "correspond très exactement à la description de l'individu type de Michelin, qui provient également de la Réunion, et il est identique aux exemplaires de Maurice," it is clear that M. de Loriol is right, and that I am wrong.

I should not trouble the readers of this Journal with a demonstration of M. de Loriol's exactness (which has been proved by works too numerous to stand in need of any testimonial from me), or have thought it necessary to expose in such detail the steps by which I convinced myself of having been in error, were it not that, on examination of the whole question, I found that the more important matters on which I have now to enter could be best introduced in the manner here adopted.

There can be no manner of doubt that there are two species now in existence which belong to the genus *Pseudoboletia*; one of these is exactly known from the description and figures just published by M. de Loriol—*P. indiana*. Of this species specimens were presented to the British Museum in 1842, by Lady Frances Cole; and forty years later a specimen, covered with spines, was purchased by the Trustees from M. de Robillard; these specimens have been hitherto

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labelled "*P. granulata*," but this shall be changed to *P. indiana*.

The other species was first described by Mr. Alexander Agassiz in 1863 as *Boletia granulata*, and was thus defined:—"Remarkable for its comparatively long spines. Tubercles uniform in size, very closely crowded together. Sandwich Islands." Ten years later a rather more detailed description was published in the 'Revision of the Echini' (p. 455), which agrees very well with the specimens which, in the British Museum, have been hitherto labelled *P. granulata*, save that I should not say of them that "the test is depressed, quite flattened both above and below, slightly conical, regularly arched in profile," as Mr. Agassiz's type specimens from the Sandwich Islands appear to be. As the description given by the author of the species *Boletia granulata* corresponds, so far as it goes, with that given by M. de Loriol of *Toxopneustes (Pseudoboletia) indiana* of Michelin, *granulata* and *indiana* would appear to be synonymous specific terms.

To come to the second species: that there is such a second species the collection of the British Museum is sufficient to bear witness, and we have specimens which go some way towards indicating the area of its distribution, from the Philippines and from Torres Straits. With regard to this species there should be less chance of error than with the other: firstly, because the student will not here be dependent on the poor services of one who still has much to learn\*, but will have a specimen named for him by one whose services were solicited by a great nation containing not a few competent zoologists, and who, as is well known, is the greatest living authority on the Echinoidea—well, the specimen named by Mr. Agassiz for the 'Challenger' collection is called *P. indiana*; secondly, this species is not one that can be easily mistaken, on account of the curious dark brown patches on its test and on its spines. The species with patches is identical with the *P. indiana* from the 'Challenger,' and the description given in the 'Revision' of *P. indiana* applies to the specimens so labelled by me in the British Museum.

I have, I trust, made it clear that, in the absence of Michelin's or of Agassiz's type specimens of the two species, I had ( $\alpha$ ) the next best thing—a specimen named by Mr. Agassiz, the namer of one of the two recognized species; ( $\beta$ ) that I had only the incomplete definitions of Michelin or Agassiz, in addition to the information given in the 'Revision' itself; or, in other words, I was, I submit, justified in taking the 'Revision' as my guide.

\* Cf. P. Z. S. 1880, p. 36.

The only possible fault then that can, here at any rate, be found with me (and I am sure no one will call it a fault) is that I put my trust in Mr. Agassiz's 'Revision of the Echini.' To him therefore what blame is due must be transferred.

Two questions now remain: the first is, what name shall be given to the species which has been till now labelled in the British Museum *P. indiana*? In the year 1869 that eminent zoologist the late Professor Troschel described in the 'Sitzungsberichte' (not 'Verhandl.,' as stated by Mr. Agassiz, *op. cit.* p. 153) two species of *Pseudoboletia*—*P. stenostoma* and *P. maculata*: the former appears to be a synonym of *P. indiana* (Mich.); the latter is in all probability the species which now is found to be without a name, but has been labelled *P. indiana*.

The "synonymy" of the species will then stand thus:—

#### *Pseudoboletia indiana*.

*Toxopneustes indianus*, Michelin, in Maillard's 'Réunion,' ed. 2, annex.

A, p. 5.

*Sphaerichinus indianus*, Lütken, Bidrag, p. 76 (144).

*Pseudoboletia stenostoma*, Troschel, Sitzb. nat. Ver. preuss. Rheinl. 1869, p. 96.

*Pseudoboletia granulata*, Agassiz, Rev. Ech. pp. 153 and 455; Bell, P. Z. S. 1881, p. 432.

*Pseudoboletia indiana*, de Loriol, Cat. raisonné Ech. Maurice (1883), p. 28.

#### *Pseudoboletia maculata*.

*Pseudoboletia maculata*, Troschel, Sitzb. nat. Ver. preuss. Rheinl. p. 96.

*Pseudoboletia indiana*, Agassiz, Rev. Ech. p. 456, pl. v. a, figs. 8 and 9; Bell, P. Z. S. 1881, p. 433; Agassiz, Chall. Rep. Ech. p. 107.

The second question that remains for consideration is the geographical distribution of the species, in which again there is some confusion, owing to the statements made by Mr. Agassiz. In the Rev. Ech. p. 153, the only locality given for "*P. granulata*" is Sandwich Islands, while "*P. indiana*" is said to come from Masbate, Philippines, Mauritius, Bombay, and Bourbon. Specimens from the first three of these localities are said to be in the British Museum; it is now clear that those from the first two are examples of *P. maculata*. For *P. indiana* Mauritius and the neighbouring islands are authentic localities, while, like *Tripneustes variegatus*, it appears too to be found at no less distant a locality than the Sandwich Islands. In conclusion it may be added that Mr. Agassiz incorrectly prefixed the sign  $\oplus$  to his "*P. indiana*"

of the 'Challenger' Report (p. 269), inasmuch as that sign means that the species was "previously known, but found in the district for the first time by the 'Challenger';" and, on his own showing, he had seen in the British Museum, some ten years previously, specimens from Masbate and the Philippine Islands.

The preceding remarks show into what confusion the species of this genus, with a literature more scanty than most, have been allowed to fall, and the thanks of systematic naturalists are due to M. de Loriol for directing attention to its condition.

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XIII.—*On new Stylasteridæ, with Remarks on some recently described Forms.* By J. J. QUELCH, B.Sc. Lond., Assistant, Zoological Department, British Museum.

THE four species herein described as new are founded on specimens in the collection of the British Museum. Special interest is attached to *D. breviserialis*, owing to the very great obliteration of the lateral furrows of cyclo systems, except at the distal parts of the cœnosteum; and also to *Allopora ochracea*, in which the number of the dactylozooids in each cyclo system is very limited, being usually only three or four. The locality of *Stylaster pulcher* is specially interesting among the Hydrocorallinæ. In describing the colours of the specimens I have had reference to Werner's 'Nomenclature of Colours.'

*Allopora ochracea*, n. sp.

Cœnosteum of a reddish-orange ochre colour, branched, compact, irregularly flabellate; branches thick, spreading, slightly flattened and obtuse at the ends; surface nearly smooth or finely granulated; cyclo systems closely placed on all parts, often in irregular series, being about .5 millim. to 2 millim. apart, of very variable structure, but not raised above the general surface of the cœnosteum; dactylo pores very few in each system, variable in number, from 1 to 5, generally 3 or 4, very rarely absent, small, subcircular, placed irregularly around the gastropore, with cavities always distinctly separated, and occupied by a relatively large hirsute style; gastropores about .4 millim. in diameter, circular, rather deep, with a thick, rather short, hirsute style; ampullæ large, about 1½ millim. in diameter, vesicular.